

CLAIMS

The embodiments of an invention in which an exclusive property or right is claimed are defined as follows:

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1. A method for entering data into an aircraft avionics flight management system having a computer means, the computer means communicating with a monitor, at least one data source and a text entry means, the method comprising the steps of
- 5 a. entering at least one alphanumeric character corresponding to a first text identifier into the text entry device and displaying the text entered on a flight plan entry field on the display;
- 10 b. comparing the entered character to data stored in each data source and identifying a likely text identifier that is geographically closest to the aircraft's flight plan;
- c. displaying, on the monitor, the likely text identifier;
- d. repeating steps a-c until a desired first text identifier is displayed in the flight plan entry field.
2. The method of claim 1 further comprising the steps of accepting the text identifier by the text entry means if acceptable to the aircraft operator and allowing the computer means to modify the aircraft's flight plan corresponding to the accepted text identifier.
3. The method of claim 2 further comprising the steps of
- a. entering at least one alphanumeric character corresponding to

additional text identifiers into the text entry device and displaying the text entered on a flight plan entry field on the display,

- 5        b.    comparing the entered text to data stored in each data source and identifying a likely text identifier that is geographically closest to the aircraft's flight plan,
- c.    displaying, on the monitor, the likely text identifier, and
- d.    repeating steps a-c until a desired first text identifier is displayed in the
- 10        flight plan entry field.

4.    The method of claim 3 wherein at least one data source contains avionics data.

5.    The method of claim 4 wherein at least one data source contains navigational data.

6.    The method of Claim 5 wherein the computer means is a microprocessor.

7.    The method of Claim 6 wherein each text identifier is selected from the group consisting of, and otherwise corresponding, to airway data, waypoint data and aircraft procedure data.

8.    The method of claim 7 further comprising the steps of:

- a.    entering at least one alphanumeric character corresponding to a first text identifier into the text entry device and displaying the text entered

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- 5      b.      comparing the entered character to data stored in each data source  
and identifying a likely text identifier that is geographically closest to  
the aircraft's flight plan;
- 10      c.      displaying, on the monitor, the likely text identifier;
- 15      d.      entering at least one alphanumeric character corresponding to  
additional text identifiers into the text entry device and displaying the  
text entered on a flight plan entry field on the display,
- 20      e.      comparing the entered text to data stored in each data source and  
identifying a likely text identifier that is geographically closest to the  
aircraft's flight plan,
- 25      f.      displaying, on the monitor, the likely text identifier
- 30      g.      repeating steps a-f until all desired text identifiers are displayed in the  
flight plan entry field; and
- 35      h.      accepting the text identifier by the text entry means if acceptable to the  
aircraft operator and allowing the computer means to modify the  
aircraft's flight plan corresponding to the accepted text identifier.

9.      The method of claim 8 further comprising the steps of:

- 5      a.      notifying the computer means by the text entry means to allow the  
computer means to obtain a runway list from the data source for all  
runways associated with a destination airport;
- 10      b.      removing active runway information from the runway list and sorting  
and listing all remaining runways by proximity to the active runway

on a flight plan entry field on the display;

- b. comparing the entered character to data stored in each data source and identifying a likely text identifier that is geographically closest to the aircraft's flight plan;
- c. displaying, on the monitor, the likely text identifier;
- d. entering at least one alphanumeric character corresponding to additional text identifiers into the text entry device and displaying the text entered on a flight plan entry field on the display,
- e. comparing the entered text to data stored in each data source and identifying a likely text identifier that is geographically closest to the aircraft's flight plan,
- f. displaying, on the monitor, the likely text identifier
- g. repeating steps a-f until all desired text identifiers are displayed in the flight plan entry field; and
- h. accepting the text identifier by the text entry means if acceptable to the aircraft operator and allowing the computer means to modify the aircraft's flight plan corresponding to the accepted text identifier.

The method of claim 8 further comprising the steps of:

- a. notifying the computer means by the text entry means to allow the computer means to obtain a runway list from the data source for all runways associated with a destination airport;
- b. removing active runway information from the runway list and sorting and listing all remaining runways by proximity to the active runway



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or

Figure 1 consists of 12 bar charts, each representing a different variable. The x-axis for each chart lists the categories, and the y-axis represents the percentage of respondents. The bars are color-coded: blue for the 2008 election and red for the 2012 election.

- Age:** Categories are 18-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75+. The 2012 election shows a higher percentage of respondents in the 18-24 age group compared to 2008.
- Sex:** Categories are Male, Female. The percentages are relatively stable between 2008 and 2012.
- Education:** Categories are High School, College, Graduate. The 2012 election shows a higher percentage of respondents with a college degree.
- Income:** Categories are Less than \$10,000, \$10,000-\$20,000, \$20,000-\$30,000, \$30,000-\$40,000, \$40,000-\$50,000, \$50,000-\$60,000, \$60,000-\$70,000, \$70,000-\$80,000, \$80,000-\$90,000, \$90,000-\$100,000, More than \$100,000. The 2012 election shows a higher percentage of respondents in the \$10,000-\$20,000 income bracket.
- Marital Status:** Categories are Single, Married, Divorced, Widowed. The 2012 election shows a higher percentage of respondents who are married.
- Religion:** Categories are Protestant, Catholic, Jewish, Muslim, Other. The percentages are relatively stable between 2008 and 2012.
- Ethnicity:** Categories are White, Black, Hispanic, Asian, Other. The 2012 election shows a higher percentage of respondents who are White.
- Political Affiliation:** Categories are Republican, Democrat, Independent. The 2012 election shows a higher percentage of respondents who are Republican.
- Party Affiliation:** Categories are Conservative, Moderate, Liberal. The 2012 election shows a higher percentage of respondents who are Conservative.
- Ideology:** Categories are Capitalism, Socialism, Communism, Other. The 2012 election shows a higher percentage of respondents who are Capitalist.
- Attitude towards the environment:** Categories are Very concerned, Somewhat concerned, Not concerned. The 2012 election shows a higher percentage of respondents who are very concerned.
- Attitude towards the government:** Categories are Very satisfied, Somewhat satisfied, Not satisfied. The 2012 election shows a higher percentage of respondents who are not satisfied.

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10. A method for entering data into an aircraft avionics flight management system having a computer means, the computer means communicating with a monitor, at least one data source and a text entry means, the method comprising the steps of:

- a. entering at least one alphanumeric character corresponding to a first text identifier into the text entry device and displaying the text entered on a flight plan entry field on the display;
- b. comparing the entered character to data stored in each data source and identifying a likely text identifier that is geographically closest to the aircraft's flight plan;
- c. displaying, on the monitor, the likely text identifier;
- d. entering at least one alphanumeric character corresponding to additional text identifiers into the text entry device and displaying the text entered on a flight plan entry field on the display,
- e. comparing the entered text to data stored in each data source and identifying a likely text identifier that is geographically closest to the aircraft's flight plan,
- f. displaying, on the monitor, the likely text identifier
- g. repeating steps a-f until all desired text identifiers are displayed in the flight plan entry field; and
- h. accepting the text identifier by the text entry means if acceptable to the aircraft operator and allowing the computer means to modify the aircraft's flight plan corresponding to the accepted text identifier.

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The method of claim 10 wherein at least one data source contains avionics data.

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The method of claim 11 wherein at least one data source contains navigational data.

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The method of Claim 12 wherein the computer means is a microprocessor.

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The method of Claim 13 wherein each text identifier is selected from the group consisting of, and otherwise corresponding, to airway data, waypoint data and aircraft procedure data.

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A system for entering and editing data in a aircraft flight plan, the system comprising an aircraft avionics flight management system having a computer means, the computer means communicating with a monitor, at least one data source and a text entry means, the text entry means configured to accept at least one alphanumeric character corresponding to a first text identifier, the monitor configured to display the text entered on a flight plan entry field on the display and the computer means configured to compare the entered character to data stored in each data source and identifying a likely text identifier that is geographically closest to the aircraft's flight plan.

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The system of claim 15 wherein the monitor is further configured to display the likely text identifier.

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The system of claim 16 wherein the text entry means is configured to accept at least one entered alphanumeric text character corresponding to additional text identifiers, the monitor is configured to display the text entered on a flight plan entry field on the display and the computer means is configured to compare the entered character to data stored in each data source, identify additional likely text identifiers that are geographically closest to the aircraft's flight plan and modify the aircraft's flight plan corresponding to the text identifier if acceptable to the aircraft operator.

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The system of claim 17 wherein the monitor is further configured to display each additional likely text identifier.

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A process for presenting acceptable options to an aircraft operator for selectable alternate runway and approach paths, the aircraft having an aircraft avionics flight management system (FMS) having a computer means, the computer means communicating with a monitor, at least one data source and a text entry means, the process comprising the steps of:

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- a. notifying the computer means by the text entry means to allow the computer means to obtain a runway list from the data source for all runways associated with a destination airport programmed within the FMS;
- b. removing active runway information from the runway list and sorting all remaining runways by proximity to the active runway heading;



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- c. allowing the computer means to select the most likely runway corresponding to the aircraft's new approach and arrival route and displaying;
- d. determining whether additional runways exist in the runway list;
- e. if no additional runways exist in the runway list, displaying the runway list to an output device;
- f. if additional runways exist in the runway list, allowing the computer means to generate an approved approach list from the data source;
- g. removing, by the computer means, the active approach information from the approach list;
- h. prioritizing all remaining runways by the type of approach available for the selected runway and allowing the computer means to store an approach list; and
- i. repeating steps e-h.

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The process of claim 19 wherein the output device is a monitor.

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The process of claim 20 wherein the data source includes navigation and avionics information.

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The process of claim 21 wherein the step of prioritizing all remaining runways by the type of approach further includes the step of prioritizing all remaining runways by precisional information.

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The process of claim <sup>23</sup>22 wherein precisional information is selected from the group consisting of instrument landing system, microwave landing system, satellite landing system, localizer-type directional aid with Glideslope and localizer backcourse with Glideslope information.

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The process of claim <sup>23</sup>22 wherein the step of prioritizing all remaining runways by the type of approach further includes the step of prioritizing all remaining runways by non-precisional information.

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The process of claim <sup>25</sup>24 wherein non-precisional information is selected from the group of localizer, localizer backcourse, global positioning system, very high frequency omni-directional range, area navigation, non-directional beacon, simplified directional facility and long range navigation information.

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The process of claim <sup>26</sup>25 further including the steps of:

- a. notifying the computer means by the text entry means to determine all legs associated with a new alternate approach associated with a new runway and further having a new intercept point along the new alternate approach;
- b. if the intercept point is within the new runway's final approach, allowing the computer means to control an output device to display an error message;
- c. if the intercept point is not within the new runway's final approach fix, allowing the computer means to control the monitor to display an error

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message;

- d. if the intercept point is located within the new runway's final approach fix, allowing the computer means to obtain a new leg corresponding to the new alternate approach and to delete waypoints along the leg which the aircraft has passed;
- e. allowing the computer means to calculate a proposed turn direction and intercept angle for the aircraft to achieve the new intercept point in the new alternate approach and controlling the monitor to display the new alternate approach;
- f. repeating steps a-e until the operator accepts or cancels the new alternate approach;
- g. if the operator accepts the new alternate approach, allowing the computer means to replace the active flight plan with the new alternate approach in the FMS and executing the new alternate approach.

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A process for presenting at least one new alternate approach pattern to a new runway to an aircraft operator for selection, the aircraft having an aircraft avionics flight management system (FMS) having a computer means, the computer means communicating with a monitor, at least one data source and a text entry means, the process comprising the steps of:

- a. notifying the computer means by the text entry means to determine all legs associated with the new alternate approach and a new intercept point along the new alternate approach;
- b. if the intercept point is within the new runway's final approach, allowing

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the computer means to control an output device to display an error message;

c. if the intercept point is not within the new runway's final approach fix, allowing the computer means to control the monitor to display an error message;

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d. if the intercept point is located within the new runway's final approach fix, allowing the computer means to obtain a new leg corresponding to the new alternate approach and to delete waypoints along the leg which the aircraft has passed;

e. allowing the computer means to calculate a proposed turn direction and intercept angle for the aircraft to achieve the new intercept point in the new alternate approach and controlling the monitor to display the new alternate approach;

f. repeating steps a-e until the operator accepts or cancels the new alternate approach;

g. if the operator accepts the new alternate approach, allowing the computer means to replace the active flight plan with the new alternate approach in the FMS and executing the new alternate approach.

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27 The process of claim 27 wherein the step of determining all legs associated with the new alternate approach and a new intercept point along the new alternate approach is based on aircraft position and aircraft distance to the new runway coordinates.

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